

Serial No. 10/604,202

6

GEMS 0204 PA

REMARKS

Claims 1-20 are pending in the above application. Claims 1-5,8,16 and 18 were rejected under 35 USC 103(a) as being unpatentable over Schuck et al. in view of Bartlett. Claims 6,7,9,10-15,17, 19 and 20 were rejected under 35 USC 103(a) as being unpatentable over Schuck et al in view of Bartlett as applied to claims 1-5, 8, 16 and 18 above and in further view of any one of Agrawal et al, Alexev et al, or Acharya et al.

Claims 1-5,8,16 and 18 rejected under 35 USC 103(a)

Claims 1-5,8,16 and 18 were rejected under 35 USC 103(a) as being unpatentable over Schuck et al.(US 5,960,636) in view of Bartlett (4,796,433). The Office Action asserts that Schuck et al discloses the Applicant's basic inventive concept (which Examiner asserts is the use of a nitrogen pre-cooler to precool helium cooling system) with the exception of using a regenerative heat exchanger to cool the incoming stream using the exiting stream. The Examiner asserts that Bartlett shows this feature to be old in the cryogenic art and the Examiner therefore asserts it would be obvious to one skilled in the art to combine these references to arrive at the present invention. The Applicant respectfully disagrees and requests reconsideration in light of the aforementioned present arguments.

The present invention cannot be evaluated as a mere collection of elements to be randomly located and pieced together from prior art references. The present invention claims a novel collection and layout of such elements. The present invention is not merely a combination of pre-cooler and heat exchanger. The present invention claims the regenerative heat exchanger between the blower and magnet AND claims the pre-cooler assembly between the regenerative heat exchanger and the magnet assembly. This combination allows the pre-cooler to be operated at efficiencies sufficient to quickly lower the first cryogen cooling fluid 20 to operational temperatures without freezing or seizing of the blower/compressor assembly 22. The prior art references neither contemplate nor teach this structural arrangement limitation. The heat exchangers in the Bartlett reference are completely integrated within the cooling assembly 25, and not independent as in the present invention. This is because they are designed to facilitate cooling of the coolant entering the Magnet 9 and not the warming up of the coolant entering the dual blower assembly 19,23. The present invention, however, utilizes a discreet flow region heat transfer to improve efficiencies and prevent blower freeze-up. Similarly, it is not only the existence of an after-

Serial No. 10/604,202

7

GEMS 0204 PA

cooler heat exchanger but its position within the flow structure that provides the efficiencies and benefits of the present invention and therefore deserve patentable consideration.

The Applicant requests the Examiner reconsider. The Applicant calls the Examiner's attention to the fact that Bartlett was filed over 16 years ago and has been published for over 15 years. Schuck was filed over 7 years ago and has been published for over 5 years. These references have been in the public view for a considerable time in a field wherein developments progress at alarming rates. Yet in this fast paced development community, with access for considerable time to these two references, existing pre-cooling designs fail to utilize the claimed concepts of the present invention and therefore suffer from thermodynamic inefficiencies that consume excess refrigerant. Thus a long-felt need has been present in combination with long felt exposure to the cited references. And yet, the Examiner was unable to find a single reference teaching the claimed limitations. The Applicant asserts that this is evidence the combination and configuration (not taught by cited references) was not obvious to one skilled in the art in light of the cited references.

Claims 6,7,9,10-15,17, 19 and 20 rejected under 35 USC 103(a)

Claims 6,7,9,10-15,17, 19 and 20 were rejected under 35 USC 103(a) as being unpatentable over Schuck et al in view of Bartlett as applied to claims 1-5, 8, 16 and 18 above and in further view of any one of Agrawal et al, Alexev et al, or Acharya et al.

The Examiner dismisses the additional limitations of these claims in way of reference to any one of Agrawal et al, Alexev et al, or Acharya et al. Specifically, the Examiner appears to be asserting that these references render obvious the use of a regenerative heat exchanger to insure that the first return line exits at substantially room temperature; AND the use of a after-cooler heat exchanger transferring heat into room temperature ambient.

The Applicant respectfully traverses the Examiner's rejection. While the cited references may reference generally room temperatures in regards to the blower in-flow, this is immaterial as they 1) fail to recite similar structure and 2) more importantly don't disclose a pre-cooler assembly. The cited references are not pre-cooler based systems and therefore may be expected to operate at temperature wherein the blower temperature is just above room temperature. Such is not the case for pre-cooling systems wherein the blower entry temperature is typically considerably below room temperature. Therefore, any recitation to such temperature by the cited reference is immaterial as it is not properly combinable with the cited references to arrive at the present invention. Furthermore, the Applicant was unable

Serial No. 10/604,202

8

GEMS 0204 PA

to locate within these references disclosure of an after-cooler heat exchanger or one that transfers to room-temperature ambient. These limitations cannot be arrived by a combination of the cited art, nor is there proper motivation to combine as the cited references do not utilizes the same structures for the purpose and arrangement claimed by the present invention.

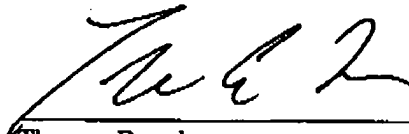
The Applicant respectfully requests reconsideration in light of the aforementioned remarks.

CONCLUSION

The Applicant would like to thank the Examiner for his assistance. In light of the above amendments and remarks, Applicant submits that all objections and rejections are now overcome. Applicant has added no new material to the application by these amendments. The application is now in condition for allowance and expeditious notice thereof is earnestly solicited.

Should the Examiner have any questions or comments that would place the application in better condition for allowance, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,



Thomas Donohue
Reg. No. 44,660
Artz & Artz, P.C.
28333 Telegraph Road, Suite 250
Southfield, MI 48034
(248) 223-9500
(248) 223-9522 (Fax)

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